

**CONTROLLING A PHASE DELAY LINE
BY ADDING AND REMOVING A FLUIDIC DIELECTRIC
ABSTRACT**

A variable phase delay line (100). The variable phase delay line (100) can include an RF transmission line (102) and a fluid channel (130) having a serpentine configuration. The fluid channel (130) can be coupled to the RF transmission line (102) along at least a portion of a length of the transmission line (102). The variable phase delay line (100) also can include at least one fluid control system (150) for adding and removing the fluidic dielectric (132) to the fluid channel (130) in response to a phase delay control signal (122) to selectively vary a phase delay of the RF transmission line (102). The fluidic dielectric (132) can have a permeability and a permittivity selected for maintaining a constant characteristic impedance along an entire length of the RF transmission line (102).